

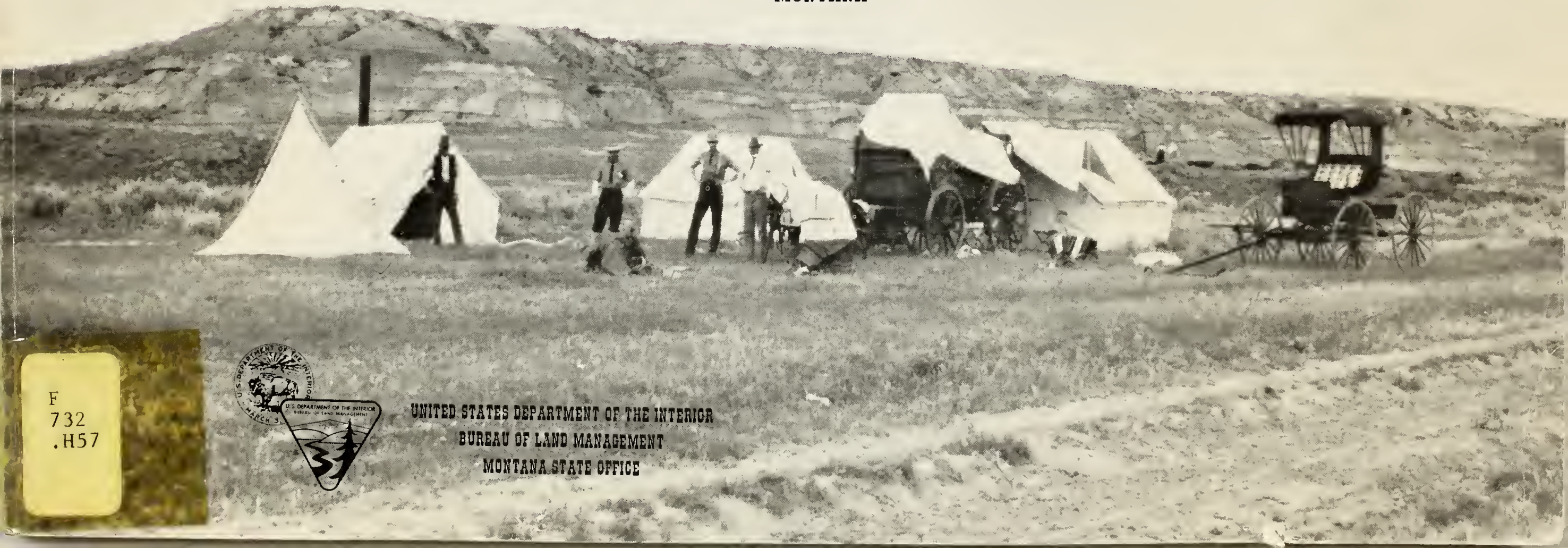
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HISTORICAL COMPARISON PHOTOGRAPHY

MISSOURI BREAKS
MONTANA



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PREFACE

It has been said long ago that "A picture is worth more than a thousand words." Indeed, about 87 percent of man's perception is visual. In the interest of providing some long term documentation of vegetational changes, a special effort was made to rephotograph several scenes in the Missouri Breaks area of central Montana, which were originally taken in the early 1900's.

This kind of photographic documentation is especially revealing in acquiring a better understanding of the amount of vegetational change which has occurred since the turn of this century. It appears that any major vegetational changes associated with livestock grazing probably occurred in the late 1880's. Also, man's control of wildfire can be noted throughout this area.

I hope these photographs will add to our understanding of long term environmental changes and perhaps inspire others to pursue this kind of photographic documentation.



Edwin Zaidlic
State Director

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ACKNOWLEDGMENTS

This document was prepared under the direction of Edwin Zaidlicz, Montana State Director, Bureau of Land Management.

The concept of a historical photograph comparison to supplement the Missouri Breaks Grazing Environmental Impact Statement originated with Duane Whitmer, Range Conservationist at the Bureau of Land Management's Montana State Office.

Among those who made this work possible were the many Montana ranchers and farmers who graciously gave permission for access across private lands. Their assistance in photographic site location also is gratefully acknowledged.

Richard Burr, retired BLM Range Scientist, provided invaluable information and assistance in compiling available historic photography.

Dr. Charles T. Mason, Jr., Curator of the University of Arizona Herbarium, made available the photographs from "Vegetational Changes in the Northern Great Plains," written in 1963 by W.S. Phillips.

The U.S. Geological Survey Photographic Library staff contributed immensely in compiling the historic survey photographs. Assistance in creation of this photograph comparison was generously given by BLM employees and the clerical staff of the Bureau's Montana State Office, Division of Resources.

To these contributors, and the many enthusiastic supporters who saw this project to its fruition, a most gracious thank you.

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INTRODUCTION

During the summer of 1977 the Montana State Office of the Bureau of Land Management, located in Billings, Montana, launched a special project of rephotographing various scenes in the Missouri Breaks Area of central Montana. This project was initiated in connection with the writing of the Missouri Breaks Grazing Environmental Statement to gain a better understanding of long term environmental changes.

Black and white prints were obtained from the U.S. Geological Survey (USGS) photographic library in Denver, Colorado. These photos were originally taken by USGS employees in conjunction with assigned field projects. Richard Burr, a retired BLM range scientist, searched out the old historical photos. Several of the early USGS photos had previously been retaken by Mr. Burr in the 1960's. This provided an opportunity to compare identical scenes at three different times.

Additional black and white prints were obtained from the University of Arizona. These photographs were originally taken by Homer Shantz in the early 1900's and retaken by Walter Phillips in the late 1950's and early 1960's. Here again we were able to compare identical scenes at three different times.

A Crown Graphic camera, 4" x 5" format, equipped with a 135mm lens, tripod and Kodak TXP 523 fast black and white film were used to obtain the 1977 photos. Most of these were taken at a shutter speed of 1/200 second with an operative setting of F-22.

A limiting factor in attempting to rephotograph any scene was the documentation of the original photo location. Photo descriptions and names were generally based on local physiographic features in usage at the time.

The photo numbers shown on the location map are the same numbers listed in the Table of Contents for quick reference.

Mike Gilkerson, Range Technician for the Division of Resources at BLM's Montana State Office, was given this unique assignment. Mr. Gilkerson kept a diary in which he noted directions to, and a brief description of, each site. His field notes are included with each photograph. He also developed a plant collection for each species encountered to assure correct identification.



Several photo locations were found only by cross-country examination on horseback.



DOBBIN, C.E. No. 5

Jordan, county seat, looking north, Garfield County, Montana. Circa 1923



GILKERSON, M. No. 1

Garfield County
Jordan, Montana
Facing North

June 1977
Private Land

The population of Jordan in 1923 was approximately 100 and is currently about 600.



ERDMANN, C. E. No. 439

Typical topography developed on Tullock member of Lance (distance) along Big Dry River where massive sandstones are developed. Sec. 36, T. 22. N., R. 43 E. McGuire Creek in foreground. Grain field on terrace as 2300 bar. Creek has cut 30 feet into plain. Pan. McCone County. September 20, 1929.



GILKERSON, M. No. 2

McCone County
T. 22 N., R. 43 E., Sec. 36
Facing North

June 1977
State Land

Grain field in background has been abandoned. Photograph point is on the south side of McGuire Creek. Cottonwoods have increased. Other vegetation noted was blue grama, prickly pear cactus and sagebrush.



ERDMANN, C. E. No. 232

View down (W) Nelson Creek for center of Sec. 4, T. 20 N., R. 44 E. Abandoned meander on flood plain in foreground. Typical of broad, open valleys of larger creeks. Trees are cottonwood. McCone County, July 1927.



GILKERSON, M. No. 3

McCone County

June 1977

T. 20 N., R. 44 E., Sec. 4

Private Land

Facing Northwest

The photograph was taken on a ridge south of Nelson Creek. Blue grama and silver sagebrush seem to have increased.



ERDMANN, C. E. No. 233

View north across valley of Nelson Creek from the NE corner of SW $\frac{1}{4}$, Sec. 16, T. 20 N., R. 44 E. Characteristic type of outcrop-barren rock above graded slopes, which are now being dissected. Typical of semi-arid regions. McCone County. July 1927.



GILKERSON, M. No. 4

McCone County

June 1977

T. 20 N., R. 44 E., Sec. 16

State Land

Facing North

The silver sagebrush appears to have increased.



ERDMANN, C. E. No. 235

View down (W) Nelson Creek from high clinker butte southwest of Crooker Ranch, Sec. 26, T. 20 N., R. 44 E. Ranch in foreground; survey camp beyond it. Highland to right are those shown in 233-234. McCone County. July 1927.



GILKERSON, M. No. 5

McCone County
T. 20 N., R. 44 E., Sec. 26
Facing Northwest

June 1977
Private Land

The Crooker Ranch is now abandoned and is just west of the Circle West Project by Burlington Northern.



ALDEN, W. C. No. 1086

View looking north over Lewistown to Judith Mountains. Big Snowy Quadrangle,
Fergus County, Montana — October 4, 1920.



GILKERSON, M. No. 6

Fergus County
Lewistown, Montana
Facing North

August 1977
Private Land

The house on the right and behind the trees was once reputed to be the
geographical center of Montana. The actual center is located 12 miles west of
Lewistown.



CALVERT, W. R. No. 29

Judith Mountains from the west, 8 miles north of Lewistown, Montana. Fergus County, Montana n.d. Circa 1907.



BURR, R. No. 429

Panorama to make a historical pair with Calvert No. 29 USGS photograph. Judith Mountains in the rear. Fergus County. 1964.



GILKERSON, M. No. 7

Fergus County

September 1977

T. 16 N., R. 18 E., Sec. 2

Private Land

Facing East

Taken from along the highway to Hilger and Roy, looking across an alfalfa field.

Can be made into a panorama with Calvert No. 30.



CALVERT, W. R. No. 30

Judith Mountains from the west, 8 miles north of Lewistown, Montana. Fergus County, Montana. n.d. Circa 1907.



BURR, R. No. 418

Historical pair with Calvert No. 30 USGS photograph. Judith Mountains in background. Fergus County, Montana 1964.



GILKERSON, M. No. 8

Fergus County

T. 16 N., R. 18 E., Sec. 2

Facing Southeast

Taken from along the highway to Hilger and Roy looking across an alfalfa field. Can be made into a panorama with Calvert No. 29.

September 1977

Private Land



STANTON, T. W. No. 952

Valley of Missouri River at mouth of Dog Creek. Looking north from near top of Claggett's hill. Montana - n.d. Circa 1903.



BURR, R. No. 476

A bend of the river with the former site of Council Islands and the site of present day Council Islands. Fergus County, Montana 1964.



GILKERSON, M. No. 9

Fergus County

September 1977

T. 23 N., R. 16 E., Sec. 36

State Land

Facing North

The photograph was taken near the old road into the old town site of Judith. Prairie junegrass, green needlegrass, plains muhly, silver sagebrush and fringed sagewort were noted on the ridge. Cottonwoods appear to have increased along the Missouri River.



STANTON, T. W. No. 59

Unusual development of sandstone in lower Judith River beds on Dog Creek, one mile above mouth. Montana 1903.



BURR, R. No. 370

Comparison with two of Stanton's photos No. 59 and No. 144 USGS. Taken slightly to right of original photographs, but intended to duplicate No. 144. Mouth of Dog Creek on the Missouri River, Fergus County, Montana 1964.



GILKERSON, M. No. 10

Fergus County

T. 23 N., R. 17 E., Sec. 31

Facing Northwest

August 1977

Private Land

Taken from ridge top on east side of Dog Creek. Stanton No. 59 and No. 144 about 20 feet apart. Vegetation noted on the ridge was needleandthread, blue grama and big sagebrush.



STANTON, M. No. 144

Looking across the Missouri River from one mile above mouth of Dog Creek with Judith Landing in the middle. Montana Circa 1903.



BURR, R. No. 371

Comparison with two of Stanton's photos No. 59 and No. 144 USGS. Taken slightly to right of original photographs but intended to duplicate No. 144. Mouth of Dog Creek on the Missouri River. Fergus County, Montana 1964.



GILKERSON, M. No. 11

Fergus County

T. 23 N., R. 17 E., Sec. 31

Facing Northwest

August 1977

Private Land

Taken from ridge top on east side of Dog Creek. Stanton No. 59 and No. 144 are about 20 feet apart. Vegetation noted on the ridge was needleandthread, blue grama and big sagebrush.



STANTON, T. W. No. 950

Eagle sandstone in foreground and middle distance, with Claggett overlain by Judith River beyond, 2 miles above mouth of Dog Creek, near Judith. Looking east. Fergus County, Montana - n.d. Circa 1903.



GILKERSON, M. No. 12

Fergus County

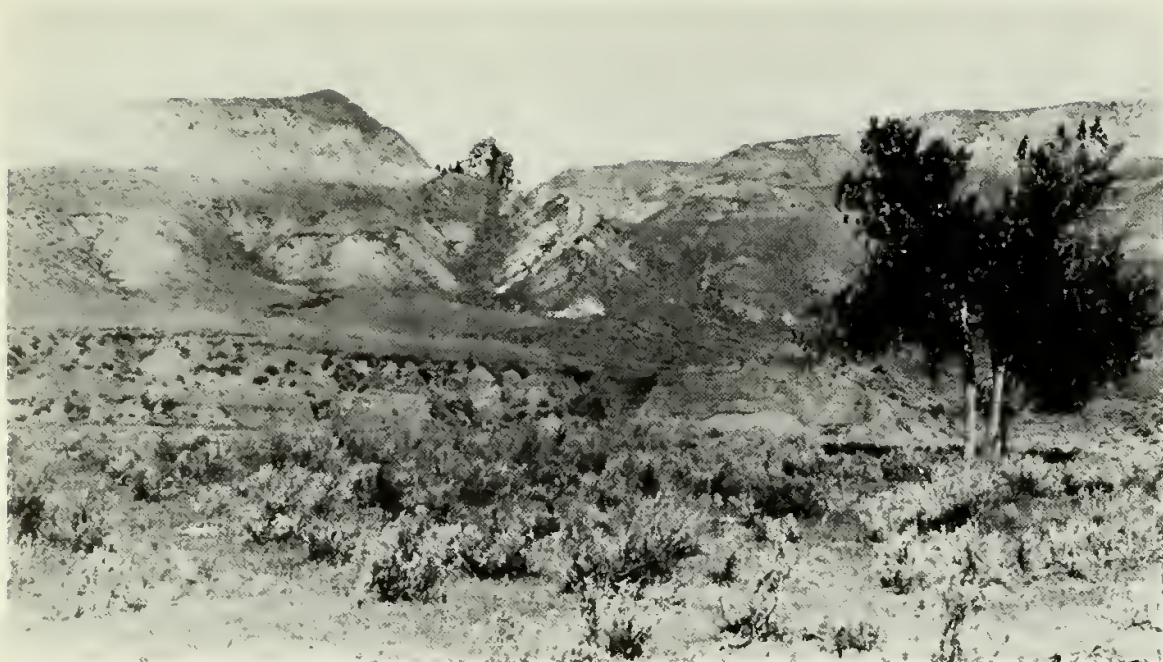
September 1977

T. 23 N., R. 17 E., Sec. 31

Private Land

Facing East

Looking across the bottom of Dog Creek. Blue grama, silver sagebrush and prickly pear cactus was the vegetation noted. Ponderosa pine and silver sagebrush have increased.



STANTON, T. W. No. 949

A faulted block of Eagle sandstone on left, in contact with shale of Claggett formation overlain by Judith River on right. Two miles above mouth of Dog Creek, near Judith. Montana Circa 1903.



BURR, R. No. 404

Historical pair with Stanton No. 959, USGS, Fergus County, Montana 1964.



GILKERSON, M. No. 13

Fergus County

August 1977

T. 22 N., R. 17 E., Sec. 6

Public Land

Facing North

The cottonwood tree is dead and silver sagebrush appears to have increased slightly. Blue grama and silver sagebrush was the vegetation noted.



STANTON, T. W. No. 134

Pillar of Eagle sandstone near mouth of Dog Creek. Very fossiliferous. Montana.
Circa 1903.

GILKERSON, M. No. 14

Fergus County

T. 23 N., R. 14 E., Sec. 31

Facing North

August 1977

Public Land

This photograph is about 100 yards north of Stanton's photographs No. 59 and No. 144. Big sagebrush, prickly pear cactus and yucca was the vegetation noted. Ponderosa pine has increased on the west side of the rock formation.





STANTON, T. W. No. 948

Upper member of Eagle Sandstone forming cliff on Dog Creek, two miles above its mouth. Looking northwest toward Judith. Montana. Circa 1903.



BURR, R. No. 447

Historical pair with Stanton No. 948, USGS. Fergus County, Montana 1964.



GILKERSON, M. No. 15

Fergus County

T. 23 N., R. 17 E., Sec. 31

Facing West

August 1977

Public Land

The camera point and angle of the 1964 and 1977 photographs do not match with the original photograph.



STANTON, T. W. No. 133

Mud Stream, Dog Creek, Montana Circa 1903.



GILKERSON, M. No. 16

Fergus County

T. 22 N., R. 16 E., Sec. 1

Facing South

Sediment has deposited in the foreground which now supports a stand of silver sagebrush and grass.

August 1977

Public Land



STANTON, T. W. No. 132

Mud Stream, Dog Creek, Montana Circa 1903.



GILKERSON, M. No. 17

Fergus County
T. 22 N., R. 17 E., Sec. 6
Facing South

August 1977
Public Land

Note the slumping in the center right and center background portions of the photograph.



STANTON, T. W. No. 940

Ferry at Judith. Distant exposures consist of Judith River and Claggett formations.
Fergus and Chouteau Counties, Montana - n.d. Circa 1903.



GILKERSON, M. No. 18

Fergus County

T. 23 N., R. 16 E., Sec. 25

Facing North

October 1977

Private Land

This photograph was taken about a mile downstream from where Stanton took the original. In the early 1900's ferries crossed the river by angling the bow into the current. The ferry is now powered by a gasoline motor.



STANTON, T. W. No. 135

Exposure of Eagle sandstone, north side of Missouri River opposite Judith.
Chouteau County, Montana - n.d. Circa 1903.



BURR, R. No. 387

Historical pan with Stanton No. 135 USGS photograph. Chouteau County, Montana
1964.



GILKERSON, M. No. 19

Chouteau County

October 1977

T. 23 N., R. 16 E., Sec. 24

Private Land

Facing North

Blue grama, western wheatgrass, green needlegrass, needleandthread, crested wheatgrass, big sagebrush and winterfat was some of the vegetation noted.



STANTON, T. W. No. 143

Looking across Missouri River at Judith, Montana - n.d. Circa 1903.



BURR, R. No. 390

Historical pan with Stanton No. 143 USGS photograph. Missouri River at the mouth of Judith River. Chouteau County, Montana 1964.



GILKERSON, M. No. 20

Chouteau County

T. 23 N., R. 16 E., Sec. 26

Facing Southeast

October 1977

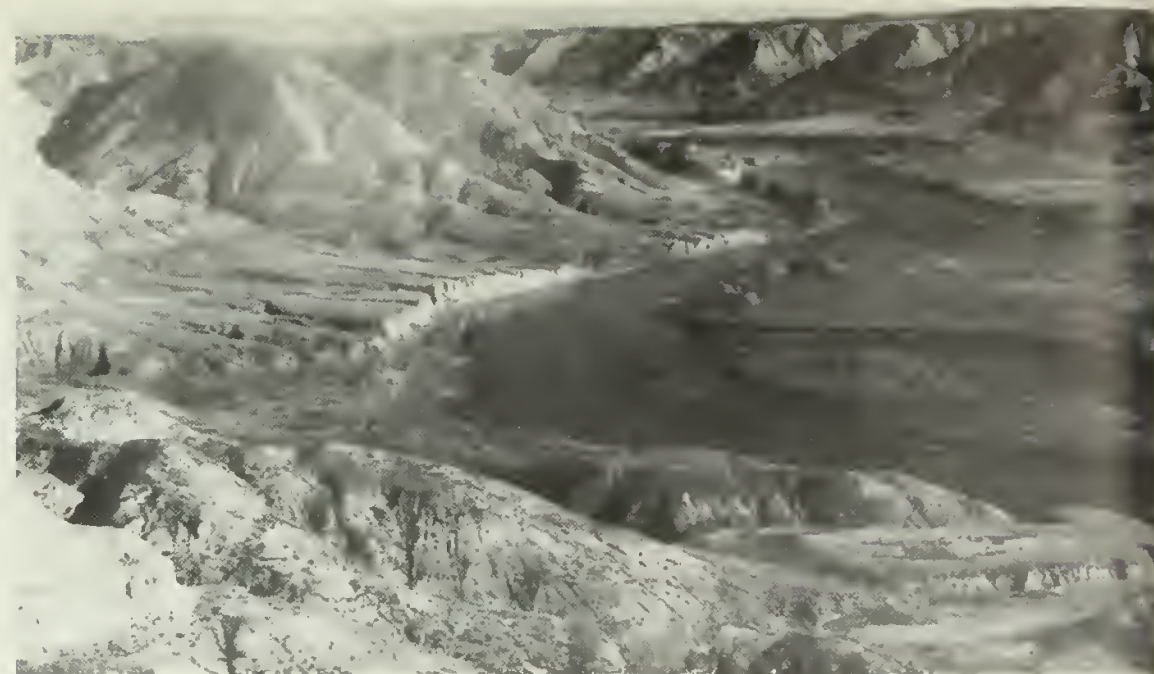
Private Land

The photograph was taken on the north bank of the Missouri River in the late fall after a dry summer.



STANTON, T. W. No. 145

Looking down Missouri River, below mouth of Birch Creek. Fergus and Chouteau Counties, Montana - n.d. Published as plate 4A in U.S. Geological Survey Bulletin 257, 1905 circa 1903.



BURR, R. No. 457

A panorama forming a historical pair with Stanton No. 145 USGS photograph. These are used in a report on river islands. Fergus County, Montana 1964.



GILKERSON, M. No 21

Blaine County

T. 23 N., R. 17 E., Sec. 22

Facing Southeast

October 1977

Public Land

The photograph was taken on the north side of the Missouri River looking downstream at Iron City Islands. Shadscale was the main shrub species identified around the bare knob where this photograph was taken.



STANTON, T. W. No. 55

General view of Judith River beds on Missouri River below mouth of Birch Creek, with uplift of Eagle and Claggett formations in the foreground and middle distance on the left. Fergus County, Montana 1903.



GILKERSON, M. No. 22

Blaine County

T. 23 N., R. 17 E., Sec. 22

Looking Southeast

October 1977

Public Land

The trees that are seen on the left side of Stanton's photograph were burned off due to a fire a few years ago. Blue grama, threadleaf sedge, needleandthread, Indian ricegrass and western wheatgrass was some of the vegetation noted on the ridge.



STANTON, T. W. No. 139

Looking across Birch Creek at fault 1 mile above mouth of creek. Montana - n.d.
Circa 1908.



GILKERSON, M. No. 23

Chouteau County

T. 23 N., R. 17 E., Sec. 21

Facing Northwest

October 1977

Public Land

The photograph was taken where the road breaks out near the top of Birch Creek Hill. Needleandthread, prairie junegrass, western wheatgrass, bluebunch wheatgrass, winterfat, big sagebrush, prickly pear cactus, ponderosa pine and Douglas fir was some of the vegetation noted on the ridge top.



STANTON, T. W. No. 56

Birch Creek near Judith. General view showing full thickness of Judith River beds eroded into badlands forms. Bearpaw Mountains in the distance. Fergus County, Montana 1903.



BURR, R. No. 430

Historical pair with Stanton No. 56, USGS photograph. A view of Birch Creek north of the Missouri River, actually a part of Milk River Basin. Chouteau County, Montana 1964.



GILKERSON, M. No. 24

Blaine County

October 1977

T. 23 N., R. 17 E., Sec. 15

Public Land

Facing Northeast

Looking up Birch Creek toward Black Coulee. Prairie sandreed, silver sagebrush, big sagebrush, prickly pear cactus, creeping juniper, ponderosa pine and Douglas fir were the species of grass shrubs and trees identified on the ridge.



STANTON, T. W. No. 946

Claggett formation overlain by Judith River formation on Birch Creek 2 miles above its mouth near Judith. Pine trees are on upper bed of Claggett. Chouteau County, Montana - n.d. Circa 1903.

BURR, R. No. 366

Historical pan with No. 946 Stanton USGS photograph. Chouteau County, Montana 1964.





GILKERSON, M. No. 25

Chouteau County
T. 23 N., R. 17 E., Sec. 16
Facing East

October 1977
State Land

The road up the creek is now impassible. Blue grama and silver sage was the vegetation noted in the bottom.



CALVERT, W. R. No. 51

Giltedge, Montana, and the Judith Mountains from the east. Fergus County, Montana - n.d. Circa 1907.



BURR, R. No. 417

Historical pan with Calvert No. 51. A view of the once prosperous mining town of Giltedge. A fire has removed the timber that was shown in Calvert's original photograph. Fergus County, Montana 1964.



GILKERSON, M. No. 26

Fergus County

T. 16, N., R. 20 E., Sec. 28

Facing West

September 1977

Private Land

The photograph was taken just off the old road into Giltedge which is now a trail along an alfalfa field. The trees destroyed in the fire are slowly coming back.



ALDEN, W. C. No. 1084

View looking west to mouth of Maiden Canyon east side of Judith Mountains. The narrow canyon, probably Pleistocene, is cut in bottom of a broad sag, which is an earlier valley probably to be correlated with the highest gravel bench remnants on plain to east. Fergus County, Montana October 2, 1920.



BURR, R. No. 614

Looking westward toward the mouth of Maiden Canyon, a Bureau recreational area in the Judith Mountains. Timber recovery is marked. Fergus County, Montana October 1966.



GILKERSON, M. No. 27

Fergus County

T. 16 N., R. 20 E., Sec. 15

Facing Northwest

September 1977

Private Land

Photograph taken on a ridge northeast of Giltedge. Blue grama, needleandthread, bluebunch wheatgrass and rose was some of the vegetation noted.



UNKNOWN No. ?

Fort Maginnis, showing the Fort as it was when it was at its peak of activity.
Fergus County, Montana. Approximately 1880-1890.



BURR, R. No. 355

Fort Maginnis, USGS Annual Report No. 18. Fergus County, Montana 1963.



GILKERSON, M. No. 28

Fergus County

T. 17 N., R. 20 E., Sec. 36

Facing Southwest

September 1977

Private Land

Deciduous trees are growing in the creek bottom. A ranch is now located on the right of the photograph where the end of the old Fort is. Western wheatgrass, bluebunch wheatgrass, prairie junegrass and fringed sagewort was some of the vegetation noted on the ridge.



CALVERT, W. R. No. 17

Laccalith one mile south of Fort Maginnis. Fergus County, Montana n.d. Circa 1907.



GILKERSON, M. No. 29

Fergus County

September 1977

T. 16 N., R. 20 E., Sec. 11

Private Land

Facing Southwest

The photograph was taken about one mile southwest of the ruins of Fort Maginnis. Needleandthread, plains muhly, prairie junegrass and blue grama was some of the vegetation noted.



CALVERT, W. R. No. 26

Black Butte from southwest. Eastern extension of the Judith Mountains. Fergus County, Montana - n.d. Circa 1907.



GILKERSON, M. No. 30

Fergus County

September 1977

T. 16 N., R. 21 E., Sec. 4

Public Land

Facing Northeast

Taken from the back of a pickup along the back road to Roy. Black Butte is in the background with Brickyard Creek in the middle of the photograph. The trees have increased on the butte and in the stream bottom. Bluebunch wheatgrass, needleand-thread and fringed sagewort was the vegetation noted along the roadside.



PHILLIPS, W. S. & SHANTZ, H. L., Pg. 35

Original Picture:

September 23, 1917 — Shantz R-8-1917

Retake Picture:

June 29, 1959 — Phillips G-5-1959

Description:

This picture illustrates a remarkable regrowth of *Pinus ponderosa* Dougl. The vegetation in foreground is little changed. Taken five miles south of Grass Range on County dirt road. Fergus County, Montana.



GILKERSON M. No. 31

Fergus County

September 1977

T. 14 N., R. 23 E., Sec. 20

Private Land

Facing Northwest

Dr. D. Ryerson and D. Whitmer were along and they identified all the vegetation on the ridge, seeded drainage bottom and the timber. Vegetation noted on:

1. Ridge: cheatgrass, bluebunch wheatgrass, red threeawn, needleand-thread, prairie sandreed, skunkbrush, rose, leafy spurge, silver sagebrush and fringed sagewort.
2. Seeded: crested wheatgrass, Russian knapweed, whitepoint loco, scrufpea, rose, fringed sagewort and clubmoss.
3. Bottom: timothy, green needlegrass, wheatgrass spp, western wheatgrass, bluebunch wheatgrass, pussytoes, fringed sagewort, snowberry, buffaloberry.
4. Timber: prairie sandreed, little bluestem, red threeawn, plains muhly, broom snakeweed, fringed sagewort and ponderosa pine.



PHILLIPS, W. W. & SHANTZ, H. L., Pg. 37

Original Picture:

September 23, 1917 — Shantz R-9-1917

Retake Picture:

June 29, 1959 — Phillips G-6-1959

Description:

Clumps of *Juniperus* growing on the side of a wash cut in the original picture. Dr. Shantz mentions both *Juniperus horizontalis* Moench and *Juniperus communis* L. In the retake there was only one plant of *Juniperus communis* L. left. The shrub in the foreground is mainly *Shepherdia canadensis* (L.) Nutt. Photograph was taken 11½ miles south of Grass Range near the county road.



GILKERSON, M. No. 32

Fergus County

T. 13 N., R. 23 E., Sec. 7

Facing North

The buffaloberry has almost disappeared in the foreground.

September 1977

Public Land



STANTON, T. W. No. 61

Carboniferous exposures at Narrows of Elk Creek, 2 miles above Junction city - Fort Maginnis road. Fergus County, Montana 1903.



BURR, R. No. 374

Historical pair with Stanton No. USGS photograph. Elk Creek southeast of Grass Range, Montana 1964.



GILKERSON, M. No. 33

Fergus County

T. 14 N., R. 24 E., Sec. 18

Facing Northeast

September 1977

Private Land

Land has been grazed and due to a dry year the grass production is low. Blue grama, bluebunch wheatgrass, green needlegrass, needleandthread and fringed sagewort was some of the vegetation noted.



PHILLIPS, W. S. & SHANTZ, H. L., Pg. 61

Original picture:

August 9, 1918 — Shantz T-3-1918

Retake picture:

June 29, 1959 — Phillips G-7-1959

Description:

The original grass is *Bouteloua gracilis* (HBK) Log. and *Agropyron smithii* Rydb. Some small amount of *Artemisia* spp in low areas. In the retake the grasses seem about the same but *Artemisia* spp has spread considerably and *Opuntia polyacantha* is common in the grass. *Pinus ponderosa* Dougl. on the bluffs has about the same number of trees, but they are larger. The stump of the farthest tree to the left is still present, although the tree has been cut down. Near Vallantine, Montana, looking ENE to Pine Bluff overlooking range ½ mile from rock near road to Dovetail.



GILKERSON, M. No. 34

Fergus County

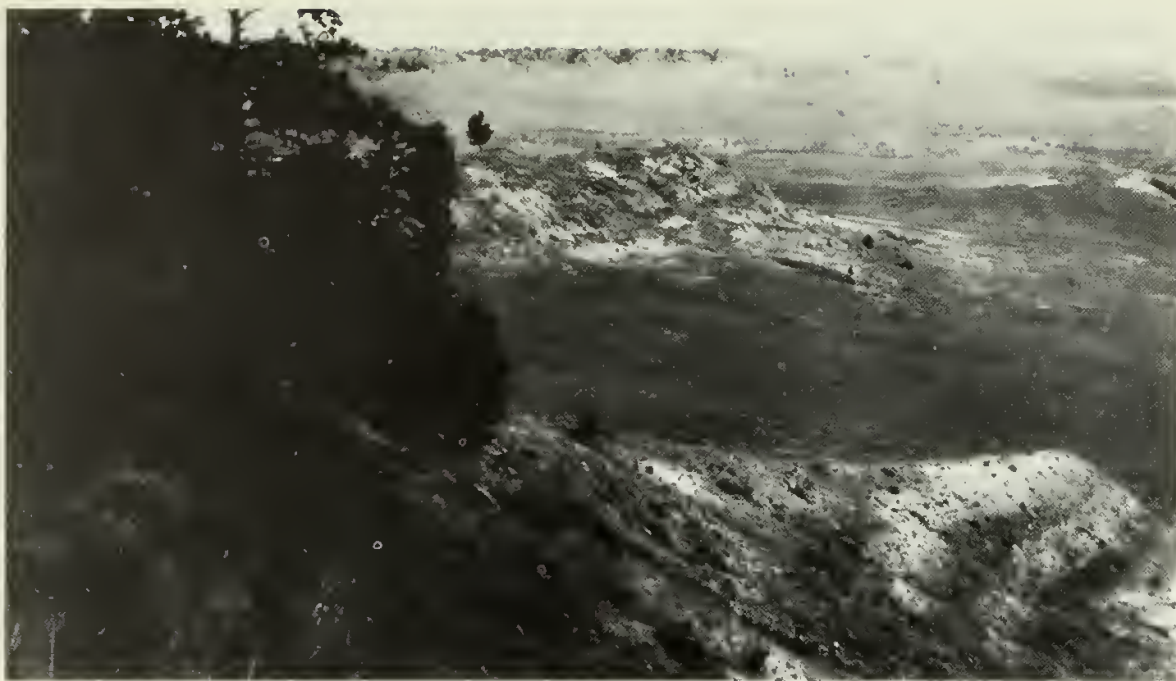
September 1977

T. 18, N., R. 26 E., Sec. 16

State Land

Facing Southeast

There has been some increase of big sagebrush. Blue grama is the major grass species and western wheatgrass appears to have decreased. Prickly pear cactus is still present.



PHILLIPS, W. S. & SHANTZ, H. L., Pg. 63

Original photograph:

August 9, 1918 — Shantz T-5-1918

Retake photograph:

June 29, 1959 — Phillips G-9-1959

Description:

Grasses of *Agropyron smithii* and some *Stipa* spp still present. *Pinus ponderosa* Dough shows some increase in size of individual trees and reproduction. Original snag in middle foreground is still present. From top of bluff shown in T-3-1918 looking northeast down the valley from Vallantine, Montana.



GILKERSON, M. No. 35

Fergus County

September 1977

T. 18 N., R. 26 E., Sec. 16

State Land

Facing Southwest

The land in the background is now farmed. The stump of the snag is still present. Bluebunch wheatgrass, little bluestem, prairie sandreed and ponderosa pine was the vegetation noted on the ridge.



PHILLIPS, W. S. & SHANTZ, H. L., Pg. 51

Original photograph:

August 15, 1908 Shantz M-7-1908

Retake photograph:

August 7, 1960 Phillips B-8-1960

Description:

The original picture shows *Arenaria* spp, *Bouteloua* spp and *Artemisia* spp. Of the two buildings shown in the original photograph, the one on the right is still used as a home. The one on the left is the machine shed which has been torn down. The picture illustrates the rugged early day environment these Experiment Stations had to build from.



GILKERSON, M. No. 36

Judith Basin County

September 1977

T. 15 N., R. 14 E., Sec. 21

Private Land

Facing North

Moccasin Experiment Station. The ornamental trees and shrubs have screened out many of the buildings visible in W.S. Phillips' 1960 photograph.



ALDEN, W. C. No. 1076

View over top of Stanford Buttes, a remnant of a high gravel bench, to Highwood Mountains, Palisade (Round) and Square Buttes, Fort Benton Quadrangle, Judith Basin County, Montana September 29, 1920.



GILKERSON, M. No. 37

Judith Basin County
T. 16 N., R. 11 E., Sec. 12
Facing North

September 1977
Private Land

The buttes are along the highway just west of Stanford. The photograph was taken approximately 20 feet west of two communication buildings, not shown in the picture. Blue grama, fringed sagewort, broom snakeweed, dotted gayfeather and clubmoss was some of the vegetation noted on the ridge.



CROSS, W. No. 713

Square Butte, Highwood Mountains. The butte as seen from the Oleson's Ranch at the base of Palisade Butte (Round Butte) looking east. Screen focus Kodak. Fort Benton Quadrangle. Chouteau County, Montana July 29, 1904.



GILKERSON, M. No. 38

Chouteau County

T. 20 N., R. 11 E., Sec. 26

Facing Northeast

October 1977

Private Land

The Oleson's Ranch is now abandoned with the barn and the foundation of the house still there. Kentucky bluegrass, crested wheatgrass, rose and an ornamental shrub were noted in the foreground.



CROSS, W. No. 716

Square Butte, Highwood Mountains. A "hoodoo" ridge of shonkinite on the south side. Screen focus Kodak. Fort Benton Quadrangle Chouteau County, Montana July 29, 1904.



BURR, R. No. 380

Historical pair with Cross No. 716 USGS photograph. A valley close to Square Butte. Chouteau County, Montana 1964.



GILKERSON, M. No. 39

Chouteau County

T. 20 N., R. 12 E., Sec. 30

Facing Northwest

October 1977

Private Land

This site is looking onto public land. It was difficult to relocate as it cannot be viewed from the road. Green needlegrass, bluebunch wheatgrass, blue grama, needleandthread, prairie junegrass, big sagebrush, fringed sagewort and Douglas fir was the vegetation noted.



ALDEN, W. C. No. 1260

North bluff of Steel Creek Valley (Shonkin Sag) east of Village of Square Butte, showing bed of volcanic ash overlain by sandstone with gravel (glacial drift?) at top. Fort Benton Quadrangle Chouteau County, Montana July 22, 1922.



GILKERSON, M. No. 40

Chouteau County

September 1977

T. 20 N., R. 12 E., Sec. 11

Private Land

Facing Northeast

The white bluffs stand out in the distance and are east of the highway into Square Butte from Stanford. Blue grama, western wheatgrass, needleandthread, fringed sagewort, silver sagebrush, prickly pear cactus, and dandelion was the vegetation noted.



HEALD, K. C. No. 113

Square Butte, Chouteau County, Montana September 21, 1920.



GILKERSON, M. No. 41

Chouteau County
Square Butte, Montana
Facing Southwest

Septmeber 21, 1977
Private Land

The old photograph was taken from the railway depot platform which has now been removed. These photographs are exactly 57 years apart. There are still quite a few people who live in town and the school is being used.



PIERCE, W. G. No. 146

View of the Eagle formation and part of the underlying Colorado shale about a mile northeast of the town of Square Butte near the south line T. 21 N., R. 12 E., Sec. 34. The broad flat in the foreground is a Pleistocene diversion channel of the Missouri River. Part of the Shokin Sag. Chouteau County, Montana September 23, 1932.



BURR, R. No. 364

Historical pair with Pierce No. 146 USGS photograph northeast of Square Butte, Montana - Chouteau County, Montana 1964.



GILKERSON, M. No. 42

Chouteau County

T. 21 N., R. 12 E., Sec. 34

Facing East

October 1977

Private Land

Immediately behind the photograph point is a cultivated field and in the foreground is a trail. Blue grama, needleandthread, plains muhly, green needlegrass, prairie sandreed, western wheatgrass and silver sagebrush was the vegetation noted.



PIERCE, W. G. No. 145

Distant view of the Eagle Formation and part of the underlying Colorado shale about a mile to the northeast of the town of Square Butte near the south line T. 21 N., R. 12 E., Sec. 34. The broad flat in the foreground is a Pleistocene diversion channel of the Missouri River, I.D., part of the Shonkin Sag. Chouteau County, Montana September 23, 1932.



GILKERSON, M. No 43

Chouteau County

T. 21 N., R. 12 E., Sec. 34

Facing East

Photograph taken from the highway about 1 mile northwest of Square Butte towards Geraldine.

October 1977

Private Land



PIERCE, W. G. No. 183

Shonkin Sag — A Pleistocene river channel. View is taken from near the east line T. 21 N., R. 11 E., Sec. 25, looking southeast from the north side of the "Sag." The town of Square Butte may be seen down the valley on the left. A small igneous dike is shown in the foreground. Chouteau County, Montana — September 23, 1932.



BURR, R. No. 436

Historical pair with Pierce No. 183 USGS photograph. Chouteau County, Montana - 1964.



GILKERSON, M. No. 44

Chouteau County

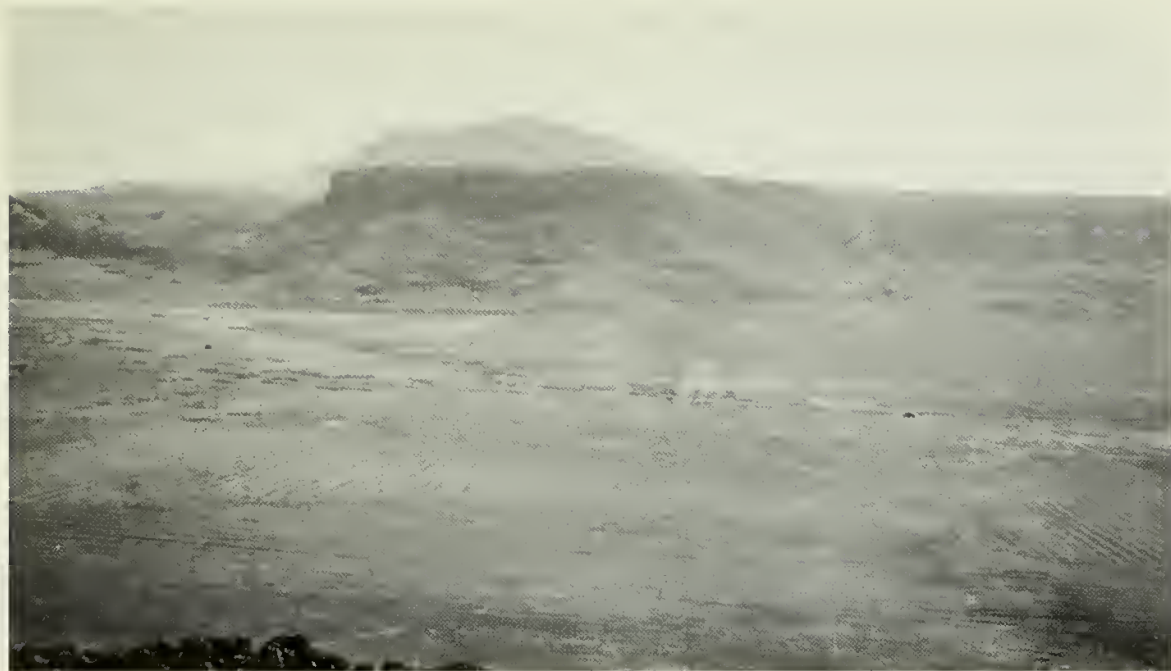
T. 21 N., R. 11 E., Sec. 25

Facing Southeast

October 1977

Private Land

View taken from a ridge top on the north side of the "Sag." The bottom of the "Sag" is cultivated except where saline seep has intruded. Can be overlapped to form a panorama with Pierce No. 184. Green needlegrass, little bluestem, western wheatgrass, prairie sandreed, plains muhly and blue grama was the vegetation noted on the ridge.



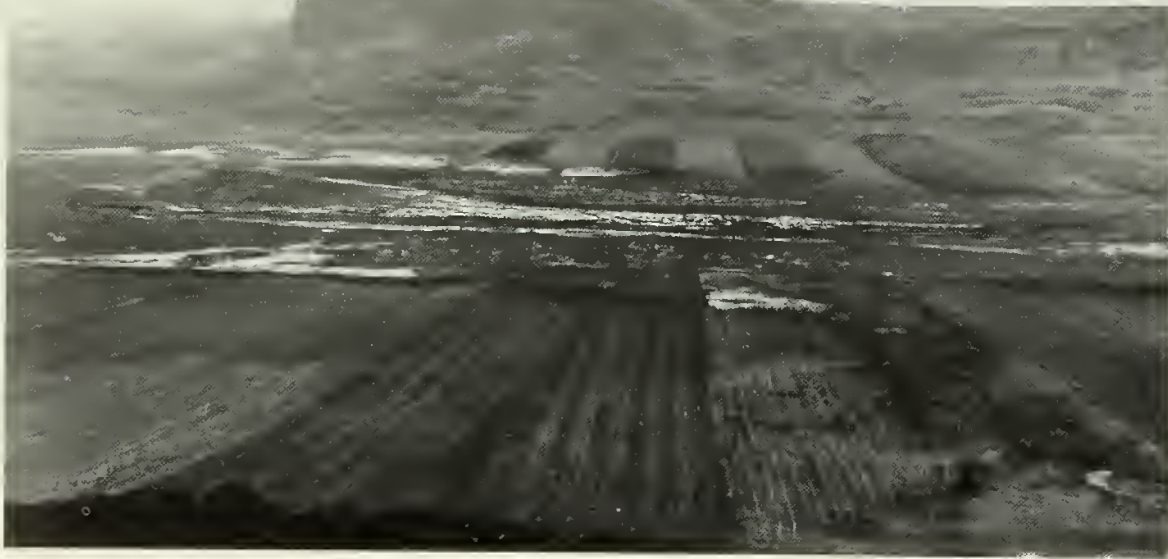
PIERCE, W. G. No. 184

Shonkin Sag — A Pleistocene river channel. View is taken from near the center of east line T. 21 N., R. 11 E., Sec. 25, looking south toward Square Butte from the north side of the "Sag." A small igneous dike is shown in the foreground. Chouteau County, Montana — September 23, 1932.



BURR, R. No. 434

Historical pair with Pierce No. 184 USGS photograph. Chouteau County, Montana — 1964.



GILKERSON, M. No. 45

Chouteau County

October 1977

T. 21 N., R. 11 E., Sec. 25

Private Land

Facing South

View taken from a ridge top on the north side of the "Sag." Saline seep has increased across the bottom of the "Sag." Can be overlapped with Pierce No. 183 to form a panorama. Green needlegrass, little bluestem, western wheatgrass, prairie sandreed, plains muhly and Blue grama was noted on the ridge.



CROSS, W. No. 720

Shonkin Sag loccolith, northeast base Highwood Mountains. The southern cliffs of shonkinite, looking west across Wilson's Coulee, which cuts the cliffs in the center of view. Fort Benton Quadrangle, Chouteau County, Montana July 30, 1904.



BURR, R. No. 393

Historical pair with Cross No. 720 USGS photograph. Approximately five feet off the line of the original photograph. Chouteau County, Montana 1964.



GILKERSON, M. No. 46

Chouteau County

T. 21 N., R. 11 E., Sec. 26

Facing West

October 1977

Private Land

The photograph was taken on a ridge below an upthrust of granite which drops off into the Shonkin Sag. Japanese brome, blue grama, needleandthread, red threeawn and yucca was the vegetation noted on the ridge.



CROSS, W. No. 721

Shonkin Sag loccolite, northeast base Highwood Mountains. East end of the southward facing cliffs where the main loccolite splits into several thin sheets and arms in the Cretaceous shales. Fort Benton Quadrangle. Chouteau County, Montana July 30, 1904.



GILKERSON, M. No. 47

Chouteau County
T. 21 N., R. 11 E., Sec. 26
Facing Northwest

October 1977
Private Land

This photograph can be made into a panorama with Cross NO. 720. Note the increase in vegetation cover on the hillside. Japanese brome, blue grama, needle-andthread, red threeawn and yucca was the vegetation noted on the ridge.



CROSS, W. No. 722

Shonkin Sag loccolith, northeast base Highwood Mountains. Southward facing cliffs east of Wilson's Coulee. The point seen in Photo No. 721 where loccolith abruptly ends, sending thin arms into sediment is near center of cliff line of this photograph. From bench 100 feet below base of loccolith. Fort Benton Quadrangle. Chouteau County, Montana July 30, 1904.



GILKERSON, M. No. 48

Chouteau County
T. 21 N., R. 11 E., Sec. 26
Facing Northeast

October 1977
Private Land

This photograph is significant because in the 1930's a quarry was in production at this spot which operated for approximately 15 years. Now there are no buildings.



CROSS, W. No. 719

Shokin Sag loccolith, northeast base Highwood Mountains. Exposure in Wilson's Coulee just above ranch. The cliffs are mainly of shonkinite, but sodalite-syenite comes in at the level of ravine on skyline. Fort Benton Quadrangle. Chouteau County, Montana July 30, 1904.



BURR, R. No. 419

Historical pair with Cross No. 719, USGS photograph. A view from a ranch house of brush covered slopes near Square Butte, Montana. Not too pertinent a comparison. Chouteau County, Montana 1964.



GILKERSON, M. No. 49

Chouteau County

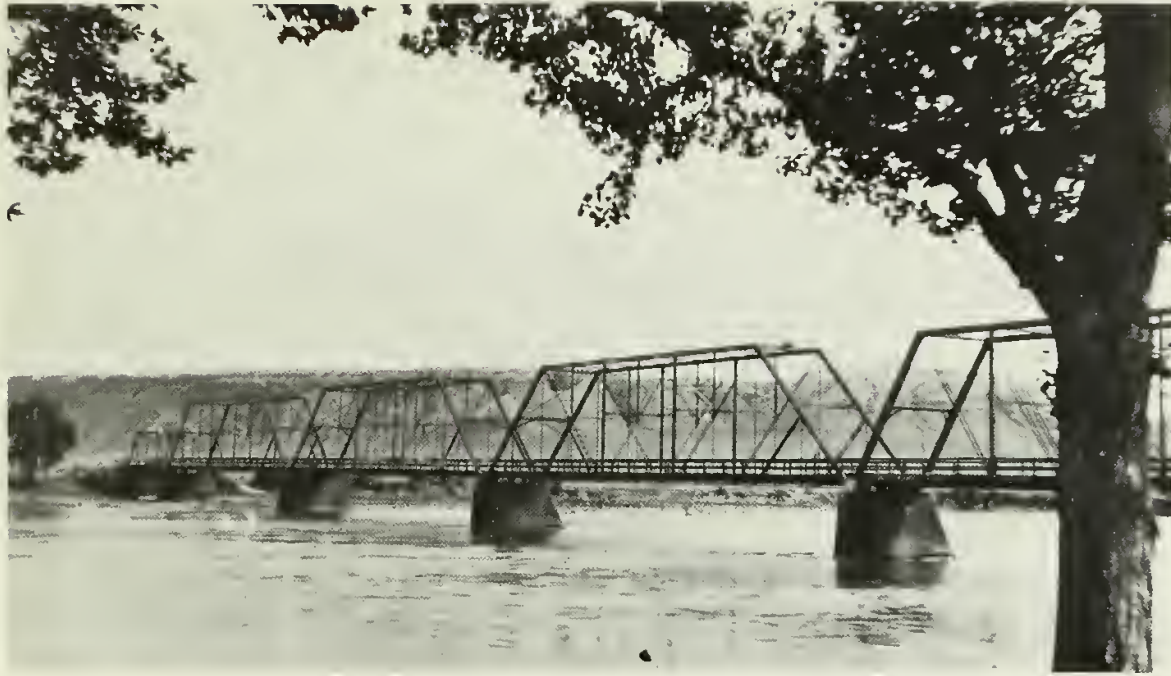
T. 21 N., R. 11 E., Sec. 27

Facing East

October 1977

Private Land

This photograph was taken about 100 yards north up the coulee from an old stage-coach stop. Deciduous trees and shrubs appear to have increased.



COLLIER, A. S. No. 921

Fort Benton Bridge across the Missouri River looking south. Rocks of Fort Benton series in background. Chouteau County, Montana 1925.



GILKERSON, M. No. 50

Chouteau County

October 1977

Fort Benton, Montana

Private Land

Facing South

Downtown Fort Benton along the river looking across the Missouri River at the old bridge which is no longer in use. The cottonwood trees have increased on the south side of the river.



REEVES, F. No. 5

Escarpment of Eagle sandstone on the upthrown side of a thrust fault. Blaine County, Montana 1922.



GILKERSON, M. No. 51

Blaine County

T. 23 N., R. 22 E., Sec. 3

Facing North

October 1977

Public Land

This photograph was taken from the road to Kipp Lookout and the mouth of Cow Creek. A wildfire occurred this summer on the northslope in the middleground. The photograph was not taken at the exact same site as the original, as increased ponderosa pine growth obscured the view.



REEVES, F. No. 1

Tilted strata along the upthrown side of the thrust fault. Blaine County, Montana
1932.



GILKERSON, M. No. 52

Blaine County
T. 23 N., R. 22 E., Sec. 8
Facing East

October 1977
Public Land

Looking up Bull Creek. The photograph point is on a ridge that runs north and south. Reeves No. 2 was taken by turning the camera to the west from this point. Needleandthread, plains muhly, blue grams, big sagebrush and ponderosa pine was the vegetation noted on the ridge.



REEVES, F. No. 2

Tilted belt along thrust fault. Blaine County, Montana 1922.



GILKERSON, M. No. 53

Blaine County

T. 23 N., R. 22 E., Sec. 8

Facing West

October 1977

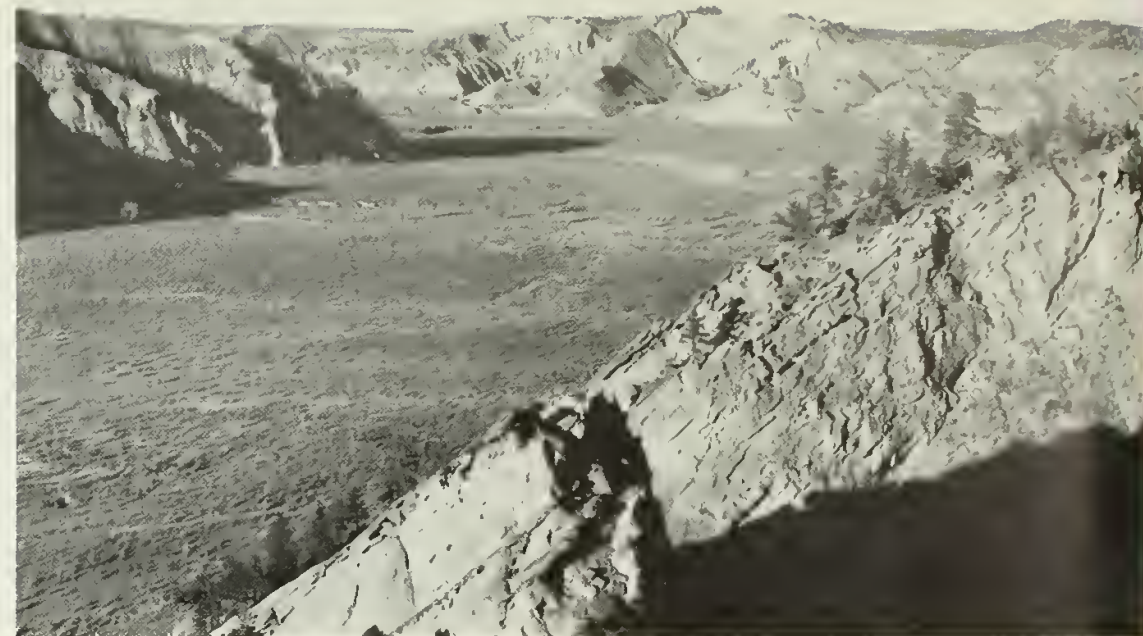
Public Land

Photograph was taken 180° from where Reeves No. 1 was taken. Note the increase in ponderosa pine. Needleandthread, plains muhly, blue grama, big sagebrush and ponderosa pine was the vegetation noted on the ridge.



STANTON, T. W. No. 45

View near mouth of Cow Creek showing highly inclined Eagle sandstone and underlying shales in contact by faulting with horizontal Judith River beds. Blaine County, Montana 1903.



GILKERSON, M. No. 54

Blaine County

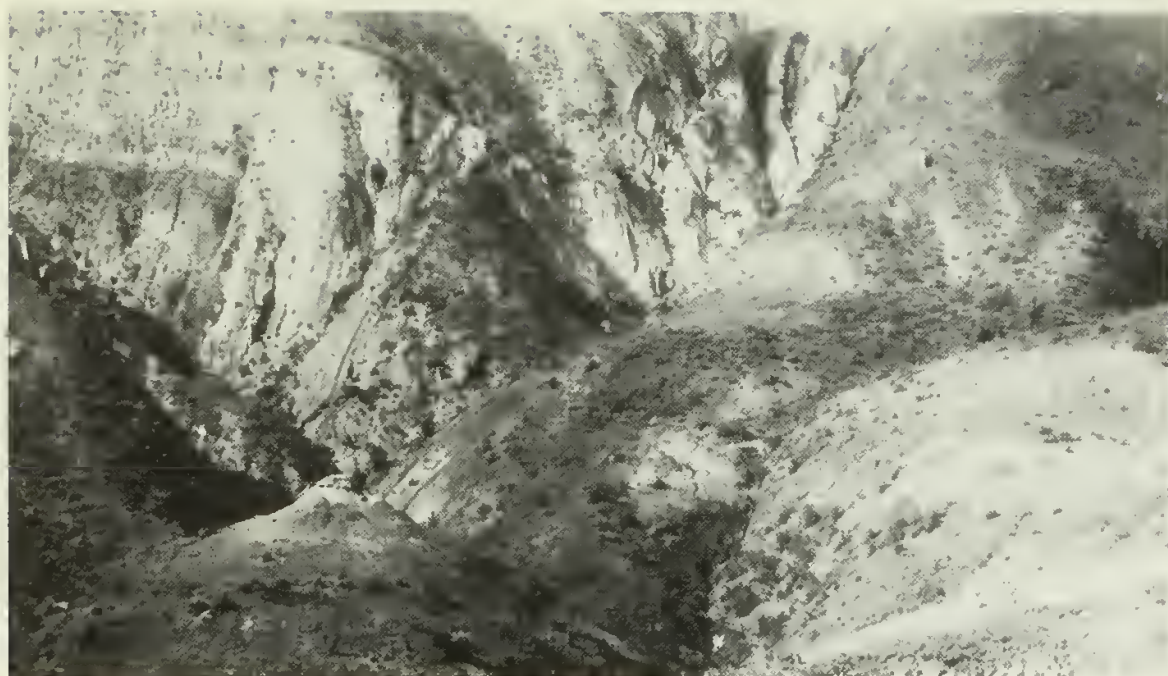
November 1977

T. 23 N., R. 22 E., Sec. 5

Public Land

Facing Northeast

Looking up Cow Creek about 1 mile above the mouth on a narrow ridge. Bluebunch wheatgrass, western wheatgrass, plains muhly, big sagebrush, ponderosa pine and creeping juniper was the vegetation noted on the ridge.



STANTON, T. W. No. 126

Fault contact of Judith River beds with Bearpaw shales on Cow Creek, 10 miles above its mouth. Blaine County, Montana - n.d. Circa 1903.

Published as plate 6-B in U.S. Geological Survey Bulletin 257 1905.



GILKERSON, M. No. 55

Blaine County

October 1977

T. 25 N., R. 21 E., Sec. 15

Public Land

Facing Southwest

The vegetation appears to have changed very little in the photographs. Shadscale and big sagebrush were among the shrubs noted.



STANTON, T. W. No. 134

Undisturbed Judith River beds with overlying Bearpaw shales on Cow Creek. The contact is below the pine trees on ridge in middle distance. Blaine County, Montana - n.d. Circa 1903.

Published as plate 6-A in U.S. Geological Survey Bulletin 257 1905.



GILKERSON, M. No. 56

Blaine County

October 1977

T. 25 N., R. 21 E., Sec. 9

Private Land

Facing West

The creek bottom in the picture at one time was under cultivation. The photograph was taken midslope on the east ridge of Cow Creek.



COLLIER, A. J. No. 881

Region south of Bearpaw Mountains. Cow Creek Canyon, a fault one mile south of Liddle Ranch, looking south. T. 26 N., R. 21 E., Section 32, Blaine County, Montana 1925 (photo by Dunning).



GILKERSON, M. No. 57

Blaine County

October 1977

T. 26 N., R. 21 E., Sec. 32

Private Land

Facing South

This photograph site is west of the Cow Island road above where it crosses Cow Creek. Western wheatgrass, Canada wildrye, silver sagebrush, cudweed sagewort, rubber rabbitbrush, willow and cottonwood was some of the vegetation noted on the creek bottom.



STANTON, T. W. No. 1057

Eagle sandstone overlain by Claggett shale near middle of photo faulted against Judith River formation on left in Sections 21 or 22, T. 23 N., R. 22 E., on powerline from Missouri River to Zortman. Phillips County, Montana - n.d. Circa 1921.



GILKERSON, M. No. 58

Phillips County

November 1977

T. 23 N., R. 22 E., Sec. 22

Public Land

Facing East

From above the road to the old Phillips power plant. The old road shown in Stanton's photograph has been abandoned. The new road is now located on the west side of the creek. Bluebunch wheatgrass, plains muhly, big sagebrush, greasewood, broom snakeweed, rubber rabbitbrush, ponderosa pine and juniper was some of the vegetation noted.



STANTON, T. W. No. 1058

Another view of same fault block of Eagle sandstone as in photo No. 1057, showing both sides of block 500 feet wide in Judith River upturned against it. Phillips County, Montana - n.d. Circa 1921.



GILKERSON, M. No. 59

Phillips County

November 1977

T. 23 N., R. 22 E., Sec. 22

Public Land

Facing East

This photograph was taken near Stanton No. 1059. The pine trees have increased but otherwise very little change seems to have occurred.



STANTON, T. W. No. 1059

Eagle sandstone, Judith River formation, etc., faulted and folded on south side of Missouri River opposite the power plant in T. 23 N., R. 22 E., Sec. 21. Phillips and Fergus Counties, Montana - n.d. Circa 1921.



GILKERSON, M. No. 60

Phillips County
T. 23 N., R. 22 E., Sec. 22
Facing South

November 1977
Public Land

The ridge where this photograph was taken is a little to the west from Stanton's No. 1058.



STANTON, T.W. No. 1062

Power plant on Missouri River in SW¼, Sec. 21, T. 23 N., R. 22 E., Judith River formation in background. Phillips County, Montana - n.d. Circa 1921.



GILKERSON, M. No. 61

Phillips County

November 1977

T. 23 N., R. 22 E., Sec. 21

Public Land

Facing Northeast

Photograph taken on the same site as Stanton No. 1060 and No. 1061, which forms a panorama view. The pine trees have increased on the ridge in the background. Blue grama, greasewood and prickly pear cactus was some of the vegetation noted.



STANTON, T. W. No. 1061

Power plant on Missouri River in SW¼, Sec. 21, T. 23 N., R. 22 E., Judith River formation in background. Phillips County, Montana - n.d. Circa 1921.



GILKERSON, M. No. 62

Phillips County

November 1977

T. 23 N., R. 22 E., Sec. 21

Public Land

Facing North

This photograph is looking just east of the power plant and can be made into a panorama with Stanton's No. 1060 and No. 1062. Blue grama, greasewood and prickly pear cactus was the vegetation noted.



STANTON, T. W. No. 1060

Power plant on Missouri River in SW¼, Sec. 21, T. 23 N., R. 22 E., Judith River formation in background. Phillips County, Montana - n.d. Circa 1921.



GILKERSON, M. No. 69

Phillips County

November 1977

T. 23 N., R. 22 E., Sec. 21

Public Land

Facing Northwest

There is nothing left of the power plant except a log cabin and the foundations. This photograph can be made into a panorama with Stanton's No. 1061 and No. 1062. Blue grama, greasewood and prickly pear cactus was the vegetation noted.



COLLIER, A. J. No. 862

Phillips power plant on the Missouri River. The plant supplies power for the mines in the Little Rocky Mountains. Phillips County, Montana 1925 (photo by Dunning).



GILKERSON, M. No. 64

Phillips County

October 1977

T. 23 N., R. 22 E., Sec. 21

Public Land

Facing East

Looking toward the ruins of the old Phillips power plant. The power plant is all gone except for one log cabin and the foundation where the plant stood. Blue grama, greasewood and prickly pear cactus was the vegetation noted.



COLLIER, A. J. No. 863

The Missouri River near Phillips power plant. T. 23 N., R. 22 E. Phillips County, Montana 1925 (photo by Dunning).



GILKERSON, M. No. 65

Phillips County

T. 23 N., R. 22 E., Sec. 21

Facing West

October 1977

Public Land

Looking up the Missouri River. The island has grown quite a bit with willows and cottonwoods on it. The river bank seems to be stabilizing itself. Blue grama, greasewood and prickly pear cactus were among the major vegetation noted.



STANTON, T. W. No. 1066

Distant view of same exposures seen in photo Nos. 1064-1065. Nose of anticline in Ellis formation resting on Madison. One mile south of Zortman, Little Rocky Mountains. Phillips County, Montana - n.d. Circa 1903.



GILKERSON, M. No. 66

Phillips County

October 1977

T. 25 N., R. 25 E., Sec. 21

Private Land

Facing North

This photograph shows the east end of Whitcomb Butte. The grass cover was very short but good. Cudweed sagewort, silver sagebrush, skunkbrush, rose and ponderosa pine were among the vegetation noted.



STANTON, T. W. No. 1064

Shale of marine Jurassic, Ellis formation resting on Madison (?) limestone, one mile south of Zortman, Little Rocky Mountains. Phillips County, Montana - n.d. Circa 1903.



GILKERSON, M. No. 67

Phillips County

October 1977

T. 25 N., R. 25 E., Sec. 21

Private Land

Facing Northeast

Photograph was taken about 1/4 mile north of Stanton's No. 1066. Can be used in a panorama with Stanton No. 1065. Little change is noted except the ponderosa pine has grown considerably. Needleandthread, little bluestem, western wheatgrass, skunkbrush, rose and ponderosa pine was some of the vegetation noted.



STANTON, T. W. No. 1065

Shale of marine Jurassic, Ellis formation resting on Madison (?) limestone one mile south of Zortman, Little Rocky Mountains. Phillips County, Montana - n.d. Circa 1903.



GILKERSON, M. No. 68

Phillips County

October 1977

T. 25 N., R. 25 E., Sec. 21

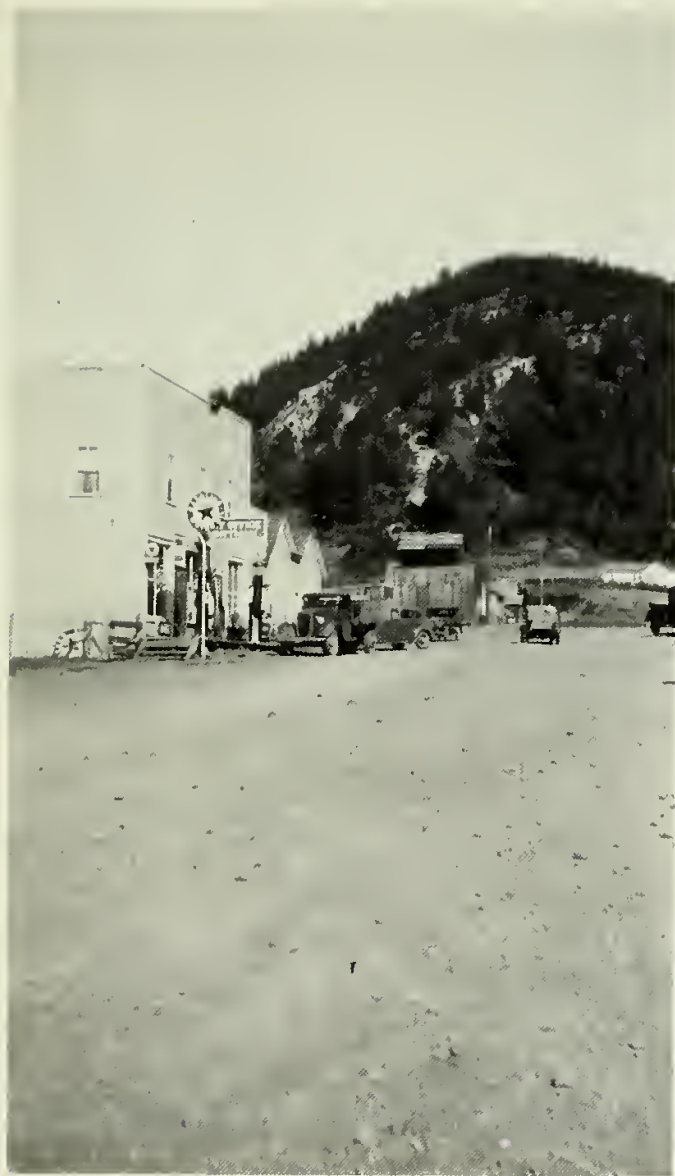
Private Land

Facing East

A panarame with Stanton's No. 1064. Little change is noted except for the increase in ponderosa pine. Needleandthread, little bluestem and ponderosa pine was some of the vegetation noted.

PARDEE, J. T. No. 1356

Mining town of Zortman in the Little Rocky Mountains. Phillips County, Montana
June 1936.



GILKERSON, M. No. 69

Phillips County
Zortman, Montana
Facing West

November 1977
Private Land

The main street of town. In 1936 two fires burned all but about 7,000 acres of the Little Rockies. The fire history for the Little Rocky Mountains is documented in, "Forest and Woodland Habitat Types of North Central Montana, Volume 1, The Little Rocky Mountains" by David W. Roberts and John I. Sibbernsen, School of Forestry, University of Montana.





COLLIER, A. J. No. 815

Eagle Child Peak (Devonian) from Landusky road. T. 25 N., R. 24 E., Sec. 19.
Phillips County, Montana 1925 (photo by Dunning).



GILKERSON, M. No. 70

Phillips County
T. 25 N., R. 23 E., Sec. 19
Facing Northeast

November 1977
Private Land

The new highway to Hays and Harlem is to the south of the photograph. The old road which appears in the photograph is no longer used except by the rancher. The ponderosa pine has greatly increased in the area. Idaho fescue, big bluegrass, silver sagebrush, fringed sagewort and broom snakeweed was some of the vegetation noted.



ALDEN, W. C. No. 1122

View northeast from No. 2 bench to the worn top of the little Rocky Mountains, west of Landusky. The bench is here graded to a shallow notch cut in top of the limestone wall. T. 25 N., R. 24 E., Sec. 21, NW¼. Phillips County, Montana July 27, 1921.



GILKERSON, M. No. 71

Phillips County

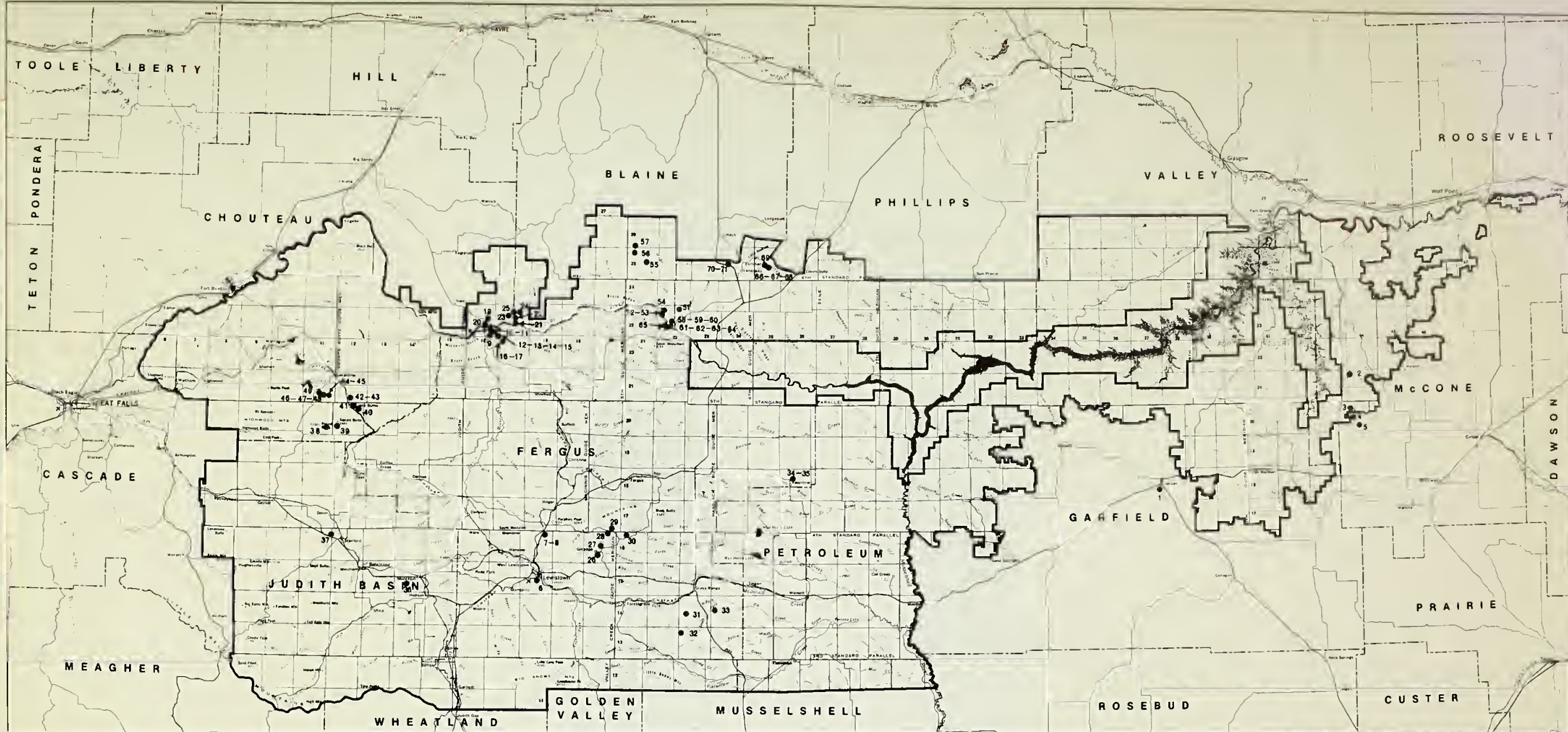
November 1977

T. 25 N., R. 24 E., Sec. 19

Private Road

Facing Northeast

The Little Rocky Mountains. The legal description is wrong in Alden's notes because it places the photograph too far east. This photograph is almost same as Collier No. 815. Idaho fescue, needleandthread, big bluegrass, silver sagebrush, fringed sagewort and broom snakeweed was some of the vegetation noted.



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HISTORICAL COMPARISON PHOTOGRAPHY

MISSOURI BREAKS ENVIRONMENTAL STATEMENT

• Photograph Retake Sites 1 - 71

GUIDE TO PLANT NAMES

GRASSES & GRASS LIKE

Common	Scientific
Wheatgrass	<u>Agropyron spp</u>
Crested wheatgrass	<u>Agropyron cristatum</u>
Western wheatgrass	<u>Agropyron smithii</u>
Bluebunch wheatgrass	<u>Agropyron spicatum</u>
Little bluestem	<u>Schizachyrium scoparium</u>
Reed threeawn	<u>Aristida longiseta</u>
Blue grama	<u>Bouteloua gracilis</u>
Japanese brome	<u>Bromus japonicus</u>
Cheatgrass	<u>Bromus tectorum</u>
Threadleaf sedge	<u>Carex filifolia</u>
Prairie sandreed	<u>Calamovilfa longifolia</u>
Canada wildrye	<u>Elymus canadensis</u>
Idaho fescue	<u>Festuca idahoensis</u>
Prairie junegrass	<u>Koeleria cristata</u>
Plains muhly	<u>Muhlenbergia cuspidata</u>
Indian ricegrass	<u>Oryzopsis hymedoides</u>
Timothy	<u>Phleum pratense</u>
Bluegrass	<u>POA spp</u>
Big bluegrass	<u>Poa ampla</u>
Kentucky bluegrass	<u>Poa pratensis</u>
Needleandthread	<u>Stipa comata</u>
Green needlegrass	<u>Stipa viridula</u>

GUIDE TO PLANT NAMES

FORBS

Common	Scientific
Pussytoes	<u>Antennaria spp</u>
Leafy spurge	<u>Euphorbia esula</u>
Russian knapweed	<u>Centaurea repens</u>
Curleycup gumweed	<u>Grindelia squarrosa</u>
Dotted gayfeather	<u>Liatris punctata</u>
Alfalfa	<u>Medicago sativa</u>
White point loco	<u>Oxytropis sericea</u>
Scrufpea	<u>Psoralea argophylla</u>
Clubmoss	<u>Selaginella densa</u>
Dandelion	<u>Taraxacum officinale</u>

GUIDE TO PLANT NAMES

SHRUBS & TREES

Common	Scientific
Sagebrush	<u>Artemisia spp</u>
Silver sagebrush	<u>Artemisia cana</u>
Fringed sagewort	<u>Artemisia frigida</u>
Cudweed sagewort	<u>Artemisia ludoviciana</u>
Big sagebrush	<u>Artemisia tridentata</u>
Shadscale	<u>Artriplex confertifolia</u>
Rubber rabbitbrush	<u>Chrysothamnus nauseosus</u>
Winterfat	<u>Ceratoides lanata</u>
Broom snakeweed	<u>Xanthocephalum sarothrae</u>
Juniper	<u>Juniperus spp</u>
Creeping juniper	<u>Juniperus horizontalis</u>
Prickly pear cactus	<u>Opuntia polyacantha</u>
Skunkbush sumac	<u>Rhus trilobata</u>
Rose	<u>Rosa spp</u>
Willow	<u>Salix spp</u>
Greasewood	<u>Sarcobatus vermiculatus</u>
Russet buffaloberry	<u>Shepherdia canadensis</u>
Soapweed	<u>Yucca glauca</u>
Lodgepole pine	<u>Pinus contorta</u>
Ponderosa pine	<u>Pinus ponderosa</u>
Cottonwood	<u>Populus deltoides</u>
Douglas fir	<u>Pseudotsuga menziesii</u>

BIBLIOGRAPHY

Johnson, J.R., Nichols, J.T. December 1970

Plants of South Dakota Grasslands, A Photographic Study, Bulletin 566

Montana State Highway Department December 1976

County Maps of Roads and Highways

Phillips, W.S. January 1963

Vegetational Changes in Northern Great Plains, Photographic Documentation, Report 214

Roberts, D.W., Sibbernsen, J.I. April 1979

Forest and Woodland Habitat Types of North Central Montana, Volume 1, The Little Rocky Mountains
Thesis: School of Forestry, University of Montana

Yaeger, R.R., Leinenger, W.C., Ryerson, D.E. March 1975

A Guide to Common Montana Range Plants, Montana State University

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